

ANNUAL REPORT

OF THE

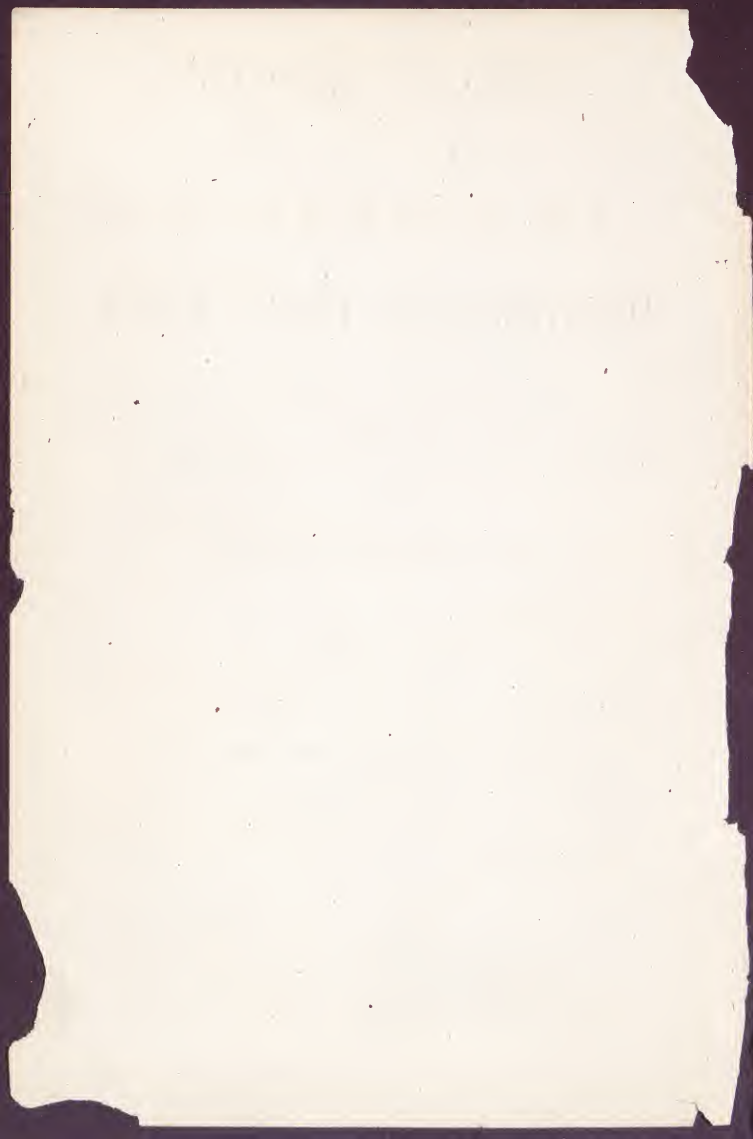
Department of Public Parks

OF THE

CITY OF NEW YORK.

TRANSMITTED TO THE LEGISLATURE MARCH 19, 1873.

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STATE OF NEW YORK.

No. 90.

IN ASSEMBLY,

March 19, 1873.

ANNUAL REPORT

OF THE

DEPARTMENT OF PUBLIC PARKS.

CITY OF NEW YORK:

DEPARTMENT OF PUBLIC PARKS, }
265 BROADWAY, *March 18th, 1873.* }

Hon. A. B. CORNELL,

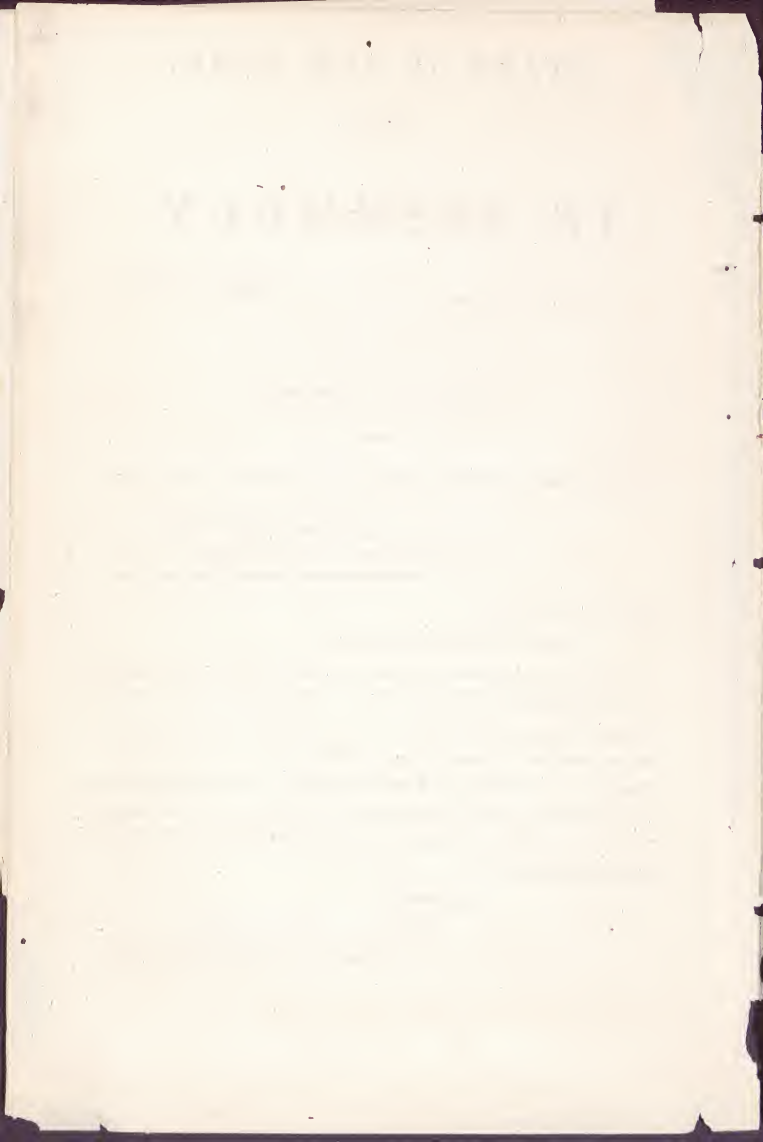
Speaker House of Assembly:

SIR.—I have the pleasure to hand you herewith the Annual Report of the Department of Public Parks to the Legislature of the State of New York, as required by law, of all their proceedings under the act entitled "An act relative to the improvement of certain portions of the counties of Westchester and New York, including provisions for communication between said counties, and for improving the navigation of Harlem river and Spuyten Duyvil creek," passed April 15th, 1871.

Respectfully,

FRED. W. WHITEMORE,

Treasurer and Secretary D. P. P.



REPORT.

To the Honorable the Legislature of the State of New York:

The Board of Commissioners of the Department of Public Parks of the city of New York respectfully submit the following report, in conformity with an act of the Legislature, passed April 15th, 1871, relating to improvements of portions of the counties of Westchester and New York, the improvement of the navigation of Harlem river and Spuyten Duyvil creek, and to facilities of communication between said counties.

The proceedings of the board, since the date of the last annual report to the Legislature, have been restricted for the want of funds applicable to the various classes of work embraced in the act.

The means for carrying on the work of surveying and preparing plans for laying out streets and other improvements in Westchester county are provided, under the law, by annual assessments upon the towns in which the work is done; and the means applicable to the construction of the Harlem river bridges and tunnels, the improvement of the navigation of the river, and repairs and maintenance of existing bridges, are provided for by the issue of bonds by the counties of New York and Westchester respectively.

Attention was called, in the last annual report, to the deficiency then existing in the means applicable to surveys in Westchester county, and also to the delays the board had experienced in regard to the Harlem river works by reason of the failure of the Westchester authorities to coöperate with the board in proceedings required by law for the issue of bonds. Other impediments to a full and uninterrupted discharge of the duties of the board were referred to, and some suggestions were made for additional legislative action to meet the apparent necessities of the case.

It is a matter of regret that these difficulties have continued during the past year, and have prevented the board from reporting at this time such an advanced state of progress of the works committed to it as the various public interests urgently require.

Solicitations from property owners in Westchester county have been numerous and pressing for the advancement of the work of laying out streets and avenues, and have been based upon the reasonable grounds that improvements cannot be safely made by them, by building upon existing lines of streets and roads, while the uncertainty exists as to whether such streets and roads will be continued, closed, or materially changed, under a general plan when adopted; that new avenues partly completed at large expense, and others much needed for the public convenience, cannot be opened and brought into use; and that divisions and transfers of property cannot be made satisfactorily to buyer or seller, while the plans remain in abeyance.

The board, fully appreciating these difficulties, has endeavored to meet them as far as practicable by preparing partial or local plans of streets and avenues where the urgency was greatest, and has, in these cases, procured the field-work to be done by contract, under stipulations providing for payment for the service only from the proceeds of assessments as they are hereafter made by the towns.

Proposals have also been invited and received from surveyors for large amounts of work to be done in this way, based upon the same conditions as to future payment, but they have been at prices so much above a fair cash value, that the board has not accepted them.

The experience that has been gained shows that it is of doubtful expediency to carry on the work by means of partial and isolated plans; it increases the aggregate labor and cost, and the longer the completion of the work, as a whole, is delayed, the greater will be the embarrassments growing up in the way of devising a harmonious and well arranged system.

The topographical surveys and maps of the entire district embraced in the law, covering 13,500 acres, are now very nearly completed and ready for laying down the final design and designating it upon the ground by monuments and filing the maps, and it would obviously be for the best interests of the people of the several towns to provide the means for expediting the work, so that the benefits to be derived from its fulfillment might accrue at a much earlier day than is practicable by means of the small annual appropriations now provided by law.

The Harlem river works of bridging and tunneling, and improvements of the navigation of the river, are intimately connected with the system of streets and avenues extending from the city of New York into Westchester county, and must, to a great extent, be

planned and executed in connection with it; and the urgency of the works, on the ground of existing and rapidly increasing public necessities, is the same in this case as in that of the more extended Westchester improvements.

Of the requisitions made by the board upon the treasurer of Westchester county, in 1871, for money to apply to surveys for the year 1872, only \$14,200 have, up to this date, been received, the requisitions being for \$10,000, as provided by law, from each of the towns of Yonkers, West Farms, Westchester, East Chester and Morrisania.

Only the towns of Yonkers and West Farms have, in part, responded.

The Legislature, by an act passed June 8th, 1872, exempted the towns of Westchester and East Chester from further surveys and requisitions.

The board made the usual annual requisition under the law upon the treasurer of Westchester county, in November last, for \$10,000 from each of the towns of Yonkers, West Farms and Morrisania, to apply to the surveys in those towns. These amounts will not accrue in the ordinary course of collections from the towns before the ensuing spring.

The following statements, show the amounts of receipts and expenditures on account of Westchester surveys and Harlem river works up to December 31st, 1872:

Statement of moneys received and disbursed on account of surveys in Westchester county by the Department of Public Parks, to December 31st, 1872:

Total amount paid by the department, for surveys, to December 31st, 1872.....	\$97,267 56
Total amount received by the department from West- chester county upon requisitions	68,844 29
Excess of payments over receipts	\$28,423 27
In addition to which there are audited and unpaid bills for work done under contracts amounting to.....	17,957 91
Total deficiency	<u>\$46,381 18</u>

Requisitions have been made by the department on Westchester county during the years 1869, 1870, 1871 and 1872, under the provisions of chapter 826, Laws of 1869; chapter 797, Laws of 1870, and chapter 534, Laws of 1871, for	\$140,000 00
Of which sum the towns of East Chester and Westchester were, by Laws of 1872, exempted from their proportion	\$20,000 00
No work having been done in the town of Morrisania, the amount called for was not levied by the supervisor	20,000 00
	<hr/> 40,000 00
	<hr/> \$100,000 00
The total amount paid to the Department of Public Parks, by the treasurer of Westchester county, on account of above requisitions, is	68,844 29
Balance due on requisitions	<hr/> \$30,155 71

Statement of receipts and disbursements by the Department of Public Parks, for account of Harlem river and Spuyten Duyvil improvement:

Received in 1869 from the city of New York...	\$10,000 00
Received in 1871 from the city of New York.....	30,000 00
Received in 1871 from sale of old lumber, Central bridge.....	291 66
Received in 1871 from sale of old lumber, Harlem bridge.....	13 90
Received in 1871 from sale of old lumber, Fordham bridge.....	7 00
Received in 1872 from sale of old lumber, King's bridge.....	10 00
	<hr/> \$40,322 56

Expended on surveys, soundings, etc.:

In 1869	\$34 79
In 1870	1,513 07
In 1871	16,102 01
In 1872	7,758 94
	<hr/> \$25,408 77

Brought forward	\$25,408 77	
Repairing Central bridge :		
1871	\$29,553 27	
1872	3,159 34	
	<hr/>	32,712 61
Repairing Harlem bridge :		
1871	\$2,216 41	
1872	4,388 79	
	<hr/>	6,605 20
Repairing Fordham bridge :		
1871	\$724 07	
1872	390 00	
	<hr/>	1,114 07
Repairing King's bridge :		
1871	\$378 65	
1872	6 34	
	<hr/>	384 97
Repairing Canal bridge, 1871		7 14
Suspension bridge, 1872		2,013 01
Tunnel, 1872		1,750 31
	<hr/>	\$69,996 08
		<hr/>
Excess of payments over receipts	\$29,673 52	
In addition to the foregoing, there are due and unpaid bills for repairing Central and Fordham bridges, amounting to		6,135 35
		<hr/>
Total deficiencies	\$35,808 87	
		<hr/>

Among the points to which the attention of the Legislature was called by the board, in the last annual report, was the amendment of chapter 534 of Laws of 1871, by striking out the following words that occur at the end of section one of that act: "Provided, however, that nothing in this act shall be so construed as in any way interfering with any improvement which has been or may be authorized by act of the Legislature in the district described in the first section of this act." It was stated that "this provision renders inoperative or affects several other provisions of the act in a way that does not seem to have been intended and is not in harmony with the general tenor of the act."

Subsequent experience in conducting the work has strengthened the objection to this provision, and it is found that if it continues to remain in force the labors of the board must be, in many respects, fruitless of the proper and apparently intended results. The original act of 1869 did not contain this provision.

The question of jurisdiction between the board of commissioners and the department of docks in reference to bulk-head lines of the Hudson and Harlem rivers and Spuyten Duyvil creek and streets connected therewith, to which attention was called in the last report, remains in the same condition as at the date of that report; as also the questions which were then referred to relating to the projected Hudson and Harlem river canal across the northern end of the island of New York.

The stone arched bridge, which had been planned and the construction contracted for by the department of public works to cross Spuyten Duyvil creek, has been turned over, together with the contract and materials delivered therefor, by the commissioners of public works to this department since the date of the last report. The erection of the bridge in the position designed being at variance with the law, it has been discontinued.

The Legislature of 1872 amended chapter 534 of Laws of 1871 by striking out sections eight and ten relating to the powers of the board of commissioners in respect to certain railway grades and the adaptation of street crossings of such grades to the security of life and property, and relating to the proper fencing and guarding of railway tracks on each side of bridges and at other points and places near any road or avenue now or hereafter to be established in the county of Westchester and crossed by any railway. The board of commissioners, in behalf of the public interests, and in consideration of the responsible duties devolved upon it by the Legislature, respectfully remonstrates against the repeal of those provisions. It was the apparent object of the Legislature that enacted the provisions, to provide proper safeguards against a class of accidents that are frequently and culpably occurring in this country in connection with railway travel and transportation, and also to protect the rights of property wherever injuriously affected by the location and operation of railways, in such manner as admits of reasonable and not unjust alleviation. The removal of the power from the board to exercise a limited discretion in the matter, and without substituting some equivalent means to meet the case, operates not only harshly toward property

owners directly affected, but perpetuates a state of things in which the public apprehension is constantly excited and human life endangered.

The board, in the discharge of its duties, as committed to it by law, will endeavor to obviate the difficulties in question, as far as circumstances will permit, but in so doing, it will be compelled to resort to plans and expedients in adjusting the positions and grades of streets and avenues, and of approaches to bridges and tunnels in the vicinity of railways, which it would not otherwise deem for the public interest.

Reference is made to the accompanying report of the engineer in charge of the work for further details.

HENRY G. STEBBINS,

*President of the Department of Public Parks
of the city of New York.*

CITY OF NEW YORK, DEPARTMENT OF PUBLIC PARKS,
265 BROADWAY, December 31st, 1872.

CITY OF NEW YORK:

DEPARTMENT OF PUBLIC PARKS,
OFFICE OF CIVIL AND TOPOGRAPHICAL ENGINEER, Dec. 31, 1872. }

HON. HENRY G. STEBBINS,

President of Department of Public Parks:

SIR.—During the past year, the topographical surveys of the Westchester district have been all completed, except about 1,500 acres, which are being done by contract and to be completed by the 1st of May next. The maps have been prepared for laying down upon them the system of streets, avenues and other improvements contemplated by the law. This latter service has been progressing as fast as the limited means provided by the several towns would permit.

Under the act of 1869, the Westchester district embraced 8,900 acres; by the act of 1871, it was extended to 25,000 acres; and by the amendment of the latter act in 1872, it was reduced (by the omission of the towns of Westchester and East Chester) to an area of 13,500 acres, and now embraces the towns of West Farms, Morrisania and the new town of Kingsbridge (late Yonkers), and a portion of the city of Yonkers. About 3,000 feet of streets and avenues have been laid out, adopted by the board, and filed; 74,000 feet, or

fourteen miles of streets and avenues have been laid out and submitted to the examination of the property owners affected, and are in readiness for the further action of the board ; and about twenty-seven miles of streets and avenues have been preliminarily studied, and only await the further order of the board for completion in the form necessary for final decision. The most of this work has been done during the past year.

The partial suspension of the work in October last, owing to the insufficiency of appropriations, has prevented the progress in the work that would otherwise have been made. The condition of surveys and maps is now such, that the work in the future may be expedited to any extent that the appropriations will warrant. I have heretofore called attention to the disadvantages, in point of economy, that result from the delays to follow up the preliminary work, and perfect the final designs and secure the work from chances of error which arise by the loss of numerous landmarks, and to the disadvantages that result to the property owners, by deferring the settlement of lines and divisions of property, and the establishment of plans of streets, which govern purchasers in the selection and improvement of sites, for residences or business.

The people of the district have become fully impressed upon these points, and are now manifesting a desire to hasten the work by means of larger appropriations than have hitherto been made. The topographical map herewith submitted shows, on a small scale, the character of the preliminary work that has been performed.

In addition to this map, working maps have been prepared on a large scale, as before mentioned, upon which have been laid down the designs and studies for streets and avenues, as far as the work of this nature has progressed.

The topographical work has been thorough, to the extent required for the object, and is believed to be accurate and reliable. The information obtained affords not only the necessary means for devising and laying out the contemplated system of improvements, but perpetuates a record of the existing physical features and characteristics of the property of the district, which will, in the course of time, become modified or obliterated.

In regard to the general principles which have thus far guided me in preparing plans for the consideration of the board, I refer to the following outline which was prepared, at the request of the president, in July last.

The terms of the law admit of a large discretion on the part of the board, the plans of the work being indicated, only so far as the same may be devised, "with benefit to the property affected, and to the public interest."

As far as plans have been matured and submitted, by direction of the board, to the examination of property owners, they seem to have met with a fair degree of approval.

OUTLINE OF PLAN FOR LAYING OUT THE WESTCHESTER DISTRICT.

The topography of the ground of the Westchester district is very variable; some portions being low and moderately broken by irregularities of surface, but the larger portion being high and rolling, with large areas of ground of too great declivity to admit of easy improvement. These features suggest the future occupation of the lowest and most accessible ground for commercial and manufacturing purposes, and the higher for residences. The prominent lines of transit and transportation will pass through the least elevated portions of the territory. Such lines should evidently be made commodious, and should be interlaced with as many easy and commodious communications with the upland as are found practicable. The regions destined to be occupied for commercial and manufacturing purposes, it is desirable, should be developed by streets and blocks of rectangular form, so as to give the greatest facilities of communication, and for utilizing the ground by compact occupation.

The districts occupied for domestic purposes, it is believed, may be judiciously treated—must necessarily, to a large extent, be treated in a different manner, being governed in this respect by the exigencies of topography. Such districts, after being subdivided by as many prominent through-lines of easy grade as are practicable, can best be developed, it is believed, by winding roads of a more rural character, avoiding deep cuttings or fillings and large expense, and conforming to the surface of the country. The divisions and plots of this character to be governed in size by circumstances that may be developed as the work progresses.

The increased facilities of rapid transit, are encouraging a tendency of population to spread into suburban and rural districts, and to occupy areas of ground somewhat larger than city lots, and a large portion of this district invites such occupancy.

The drainage of ground of this character needs to be ample and well studied. The prevailing system of drainage and sewerage of

cities will doubtless be applied to the portions of the district likely to be most densely populated. In this case the rules and practice are tolerably well established. It is a question of population, area, rainfall, artificial supply of water, and the requisite size and inclination of sewers.

For a very considerable suburban or rural area, with a population more sparse, different sanitary conditions, streets and improvements of a different character, mostly elevated ground, with comparatively small, but rapid, drainage, a different system may be advantageously considered.

The first point suggested would be, whether deep drainage or sewerage would be expedient, *i. e.*, at the depth ordinarily adopted in cities to drain cellars and basements of dwellings situated immediately on the line of the street.

It would be necessary to determine whether sewage-matter and mere surface drainage could be separated; in short, how sewage-matter could be disposed of by any other than the prevailing faulty system. For surface and road drainage, the plan adopted in Central Park, which has operated efficiently for a number of years, seems well adapted. I think it could be applied to drainage in Westchester successfully, and it is probable that for a number of years to come, no other provision would be needed for a considerable part of the district.

It will further facilitate the study of plans, and prevent questions from arising with property owners, involving changes and repetitions of work, if the following general rules are laid down to govern the work.

The rearrangement of roads and streets, as at present laid out, to be governed by the interest to the property affected and the public interests, and to conform, as far as practicable, to a general harmony of plan.

Property owners have laid out, and are now laying out, irregular and detached plots of streets, that will not conform to a general plan adapted to the public interests. Local districts have been improved upon such irregular plans, and much interest is manifested, by parties affected, about the adoption by the department of such plans.

The extent or frequency of streets to be laid out, size of blocks, etc., to be governed by the apparent necessity, in any local district, for small or large subdivisions. If not laid out in small subdivisions,

it will be necessary to study the work with reference to the practicability of the smallest probable future subdivisions.

Prominent streets and avenues to be seventy-five to one hundred feet in width; the next class of streets below these to be sixty feet in width, and the least width of any streets (on precipitous or rocky ground) to be fifty feet. Short lanes, and passages for drainage or foot ways, on precipitous ground, to be not less than thirty feet wide.

Maximum grades of prominent streets and avenues not to exceed an inclination of one foot in twenty feet of distance. Maximum grades of streets in general not to exceed one foot in twelve, except in special cases.

As the work progresses, additional points, that cannot now be provided for, will arise, requiring instructions. Among these will be the selection of sites for public squares and places, the treatment of water-front, etc.

The question of water supply to the district, will also require further development.

The Harlem river surveys have been continued during the past season, with a small force, except during interruptions for other duties.

The line of jurisdiction (low water mark) between New York and Westchester, is defined, except on a small portion of Harlem river, at the easterly end.

The soundings of the channel, with reference to the improvement of the navigation, chiefly remain to be done.

At the two principal points where rock occurs in the bed of the channel, at the head of Seventh avenue and at Kingsbridge, soundings and borings have been made with special reference to tunnels at those localities, sufficiently to determine the general extent and depth of the rock below high water.

The bed rock has also been developed in a part of the channel, at the site of the projected suspension bridge, about 1,800 feet north of the High bridge.

Investigations have been continued, by sounding, boring and sinking shafts, for perfecting the necessary information in regard to position and details of plans for the suspension bridge and the tunnel at the head of Seventh avenue. These latter investigations have been made since September last, with the advice of General George S. Greene, consulting engineer.

The question of tunnels connects itself directly with that of the improvement of the navigation of Harlem river, as the depth to

which tunnels are sunk will govern the depth of water for navigable purposes. The questions are of much importance and have received a good deal of attention by collecting information and statistics bearing upon the subject.

A diversity of opinion is found to exist as to the largest class of vessels that should be provided for to pass through the improved channel, from the Hudson to the East river; property owners more immediately affected along the route hold different views; the general public sentiment of those upon whom the expenses will fall is not known, and the law authorizing the work refers to it only in general terms.

A large expenditure is involved, embracing the improved channel above and the tunnels below, and this will be materially affected, as well as the time required to complete the respective works, by the depth of water determined upon.

The least depth of water that will meet the wants of navigation and commerce is the most favorable for the convenient adaptation and use of tunnels.

The limit is to be found in the consideration of the subject, with reference to the probable future requirements of commerce and the more immediate and accessible questions connected with the practical ends to be subserved in the position, depth, declivity and length of approaches of tunnels.

The investigation of these points is being made with reference to the tunnel first to be constructed at the head of Seventh avenue, and such judgment as can be formed, with the aid of the consulting engineer, will be submitted to the board.

Very respectfully,

WM. H. GRANT,
Civil and Topographical Engineer.

(COPY.)

CONTRACT AND SPECIFICATIONS

FOR MAKING

SURVEYS, MAPS AND PROFILES, PERTAINING TO THE LAYING OUT OF STREETS IN THE COUNTY OF WESTCHESTER, UNDER THE DIRECTION OF THE COMMISSIONERS OF THE DEPARTMENT OF PUBLIC PARKS IN THE CITY OF NEW YORK.

I hereby agree with the Department of Public Parks to make the surveys, maps and profiles, and perform all the work pertaining to the laying out of streets in the —— part of the town of —— within an area of not exceeding —— acres, in all respects in accordance with the following specifications, and subject to the directions and approval of the civil and topographical engineer for the time being in the employ of said department, and in accordance with the terms and conditions hereinafter provided.

SPECIFICATIONS—PRELIMINARY WORK.

1st. A correct copy to be made of so much of the —— part of the topographical map of the town of ——, now in the office of the Department of Public Parks, as the said civil and topographical engineer shall deem proper to include within said area of —— acres. Such preliminary center lines of streets, as shall be laid down or approved on such copy of map, by said engineer, shall be ranged out on the ground with good and substantial stakes set fifty feet apart, and profiles shall be made of the ground on such lines from the topographical levels and inclinations of surface given by the map. The work to conform to the topographical survey and maps.

2d. When required by said engineer, levels shall be taken on the preliminary center lines and on the side lines of streets, or on such parts of them as he shall direct, at distances not exceeding fifty feet apart in the direction of the streets, and in such positions as to show the inequalities of the ground. And such levels shall be shown on the profiles.

3d. Modifications and alterations of preliminary lines shall be made as directed by said engineer, and staked out on the ground, and shown on the map and profile, as a part of the preliminary work.

LOCATING STREETS AND PREPARATION OF FINAL MAPS.

4th. When surveys, maps, and profiles are completed as above provided, of such extent or within such particular area, as shall from time to time be directed by said engineer, they shall be submitted to him at the office of the said department, and such alterations and amendments as he shall make thereon, and as shall be approved by said department, together with such explanations and directions as said engineer shall give in respect to the location of the streets, shall be conformed to and the streets located on the ground in exact conformity therewith. The streets to be located by an accurate traverse of the ground by measurements and angles; all straight lines of center and sides of streets between angles and curves, and all curved lines to be accurately defined, either by measurements or by computations from the traverse lines; and all measurements, angles, computed lines, the radius of curves, distances between intersecting lines of streets, and widths of streets, and distances between all monuments, to be shown in figures on a working map, to be prepared on best quality of mounted drawing paper, and all boundary lines of property, roads, water-courses, and buildings, affected by the streets, to be shown on said map.

5th. A working profile to be made of the streets, corresponding in horizontal scale with said map, on good quality of drawing paper, upon which shall be shown all the levels herein before provided to be shown on the preliminary profiles, or, in case the preliminary lines shall be changed, other and more accurate levels to be shown from the topographical levels and inclinations, on the center and side lines of the streets, as may be required. The profiles to show all crossings of roads, fences, and water-courses, and all buildings, and all rock surfaces on the center line of streets, together with all approved grade lines of streets, the height of grade lines, and the distance along center line between changes of grades, in figures; the height of the surface of the ground along center line, the distances between the commencement and ends of straight lines and curves, and between intersecting lines of streets, the distances between all monuments, and depth and surface height of water along the center line, and also such approved drainage or sewer lines and the heights thereof, and dimensions of drains and sewers, as may be directed.

6th. In case levels shall be required, for greater accuracy, to be taken on the center line of streets or any part thereof, they shall be

taken and shown on the said working profiles as may be directed by said engineer.

7th. When the said working maps and profiles shall have been completed, and the said engineer shall have verified and approved the same, two copies of the maps and two grade maps shall be made therefrom, in a neat manner, on best quality prepared English vellum used for such purpose, and such dimensions, figures, lines, and objects, on said working maps and profiles shall be shown, or omitted, on said copies of maps and grade maps, as the said engineer shall direct; the said maps to comprise such extent or area of ground as, in any case, shall be directed by said engineer.

MONUMENTS.

8th. Monuments to be furnished and set at such points along the streets, and at such times during the progress of the work, as the said engineer shall direct. The monuments to be of stone or iron. The stone monuments to be six inches square at top, and evenly dressed and squared six inches down from top, and to be regular in shape, and not less than six inches square in any part for the balance of the length, and to be three feet long, of such sound and durable quality and kind of stone as shall be approved by said engineer. They shall be set vertically two feet ten inches deep in the ground, and sand or loam filled in around on all sides and thoroughly rammed. A small point or depression to be cut in the center of the top, which shall accurately coincide with the point of the street monumented as represented by the map.

Where sound rock is too near the surface to permit the setting of stone monuments, wrought-iron bolts will be used, to be ten inches long each, and one and one-half inch in diameter, and to be set eight inches deep in a hole drilled vertically in the rock, and filled solidly around with brimstone intermixed with one-third part of clean, fine sand. All monuments to be submitted to the said engineer for inspection before setting, and whenever he shall not be satisfied with the setting of a monument, or with the position of the same, he may require the monument to be reset.

9th. All levels are to be taken from and referred to a bench-mark on a stone monument on the line of Kingsbridge road, near Kingsbridge Hotel, in the city of New York, the height of said bench-mark being three and two-tenths feet above high-tide, and no errors or differences are to exist in the work greater than two-tenths of a

foot from the height of the said bench-mark. The heights of all monuments are to be shown with no errors greater than five one-hundredths of a foot.

10th. Two traverse lines, not exceeding four thousand feet in aggregate length, to be measured for the purpose of verification at right angles with a base line or prolongation of the easterly line of Tenth avenue in the city of New York, from such points on said base line to such points in the streets laid out east or west of the same, as the said engineer shall direct.

11th. The horizontal scale of maps and profiles to be 150 feet to one inch, and the vertical scale of profiles and grade maps to be forty feet to one inch, except as may be otherwise approved in any case by the said engineer. The maps and profiles to be the property of the Department of Public Parks.

12th. All the work to be done and returned with such accuracy that, when tested by calculations or by measurements on the ground, no greater variations shall exist in any part, line, traverse, angle or measure, than at the rate of $\frac{1}{1000}$ of a foot in 1,000 feet of length or distance. The standard of measure to be used to be such as shall be furnished or directed to be used by the said civil and topographical engineer. Any errors or omissions occurring in any part of the work shall be immediately corrected and made good to the satisfaction of said engineer, without compensation.

I hereby agree to prosecute the work in such order and in such parts as said engineer shall direct, and to complete the whole in accordance with the specifications and conditions herein contained, and to the satisfaction and acceptance of the said Department of Public Parks, or of their said engineer, and to deliver all the maps, profiles and drawings herein provided to be made or prepared, to the said department, on or before the first day of 187 and to receive as full compensation for all services, labor, materials, use of instruments, office rents, and all services and materials of every nature and kind whatsoever, in and about said surveys, maps, profiles, monuments and stakes, at and after the following rates, to wit: For preliminary work as specified in the first and third specifications herein, at the rate of cents per foot of center line of street. For preliminary work as specified in the second specification herein, at the rate of cents per foot of center line of streets, for each line of levels taken along or parallel with center line; and for work as specified in the sixth specification herein, at the rate of cents per foot of center line along which levels are taken.

For locating streets and preparing final maps, as specified in the fourth, fifth and seventh specifications herein, and including all work, labor, service and material, not provided for in the first, second, third, sixth and eighth specifications herein, at the rate of cents per foot of center line of streets.

For furnishing and setting monuments, as specified in the eighth specification herein, at the rate of dollars per monument for stone monuments, and at the rate of dollars for iron monuments.

But it is expressly understood and agreed, that no payment shall be demanded by me except from funds provided by the supervisors of the county of Westchester, pursuant to the provisions of chapter 534 of the Laws of 1871; for the purpose of paying for such surveys, when funds so provided are in the possession of the said Department of Public Parks for such purpose, and that I will look solely to such funds, so provided, for my remuneration under this agreement.

I further agree that the work shall be done under my personal supervision, and that I will not sublet the same, or any part thereof.

